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Logout

Interrupt

Main Menu

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Posting Counts

Show S Numbers

Edit S Numbers

Preferences

Cases

## Search Results -

Terms	Documents
L1 same (homoserine resist\$)	7

Database:	US Patents Full-Text Database	▲
	US Pre-Grant Publication Full-Text Database	
	JPO Abstracts Database	
	EPO Abstracts Database	
	Derwent World Patents Index	
	IBM Technical Disclosure Bulletins	▼

Search:

L2

Refine Search

Recall Text ⇄

Clear

## Search History

DATE: Wednesday, October 30, 2002 [Printable Copy](#) [Create Case](#)Set Name  
side by sideQueryHit Count Set Name  
result set

DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ

L2 L1 same (homoserine resist\$)7 L2L1 e.coli or coli64226 L1

END OF SEARCH HISTORY

TITLE: Prepn. of L-threonine by fermentation - involves culturing Escherichia sp. having L-homoserine resistance to produce L-threonine in culture soln.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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Terms
L1 same (homoserine resist\$)

Documents
7

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Display Format:

-
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Change Format
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[Previous Page](#)

[Next Page](#)

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Print

L2: Entry 1 of 7

File: PGPB

Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020102670  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020102670 A1

TITLE: DNA coding for protein which confers on bacterium Escherichia coli resistance to L-homoserine, and method for producing L-amino acids

PUBLICATION-DATE: August 1, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaly Arkadievich	Moscow		RU	
Zakataeva, Natalya Pavlovna	Moscow		RU	
Aleoshin, Vladimir Venyamiovich	Moscow		RU	
Balareova, Alla Valentinovna	Moscow		RU	
Tokhmakova, Irina Lvovna	Moscow		RU	

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
AJINOMOTO CO., INC.	Tokyo		JP	03

APPL-NO: 09/847392 [PALM]

DATE FILED: May 3, 2001

## RELATED-US-APPL-DATA:

Application 09/847392 is a continuation-of US application 09/396357, filed September 15, 1999, US Patent No. 6303348

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
RU	98118425	1998RU-98118425	October 13, 1998

INT-CL: [07] C12 P 13/06, C07 H 21/04, C12 N 9/10, C12 P 21/02, C12 N 1/21

US-CL-PUBLISHED: 435/116; 435/193, 435/252.3, 435/69.1, 536/23.2

US-CL-CURRENT: 435/116; 435/193, 435/252.3, 435/69.1, 536/23.2

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

A bacterium which has an ability to produce an amino acid and in which a novel gene (rhtB) coding for a protein having an activity of making a bacterium having the protein L-homoserine-resistant is enhanced, is cultivated in a culture medium to produce and accumulate the amino acid in the medium, and the amino acid is recovered from the medium.

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L3: Entry 1 of 4

File: PGPB

Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020102670  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020102670 A1

TITLE: DNA coding for protein which confers on bacterium Escherichia coli resistance to L-homoserine, and method for producing L-amino acids

PUBLICATION-DATE: August 1, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaly Arkadievich	Moscow		RU	
Zakataeva, Natalya Pavlovna	Moscow		RU	
Aleoshin, Vladimir Venyamiovich	Moscow		RU	
Balareova, Alla Valentinovna	Moscow		RU	
Tokhmakova, Irina Lvovna	Moscow		RU	

US-CL-CURRENT: 435/116; 435/193, 435/252.3, 435/69.1, 536/23.2

## CLAIMS:

What is claimed is:

1. A DNA coding for a protein as defined in the following (A) or (B): (A) a protein which comprises an amino acid sequence shown in SEQ ID NO: 2 in Sequence Listing; or (B) a protein which comprises an amino acid sequence including deletion, substitution, insertion or addition of one or several amino acids in the amino acid sequence shown in SEQ ID NO: 2 in Sequence Listing, and which has an activity of making a bacterium having the protein L-homoserine-resistant.
2. The DNA according to claim 1, which is a DNA as defined in the following (a) or (b): (a) a DNA which comprises a nucleotide sequence of the nucleotide numbers of 557 to 1171 of a nucleotide sequence shown in SEQ ID NO: 1 in Sequence Listing; or (b) a DNA which hybridizes with the nucleotide sequence of the nucleotide numbers of 557 to 1171 of the nucleotide sequence shown in SEQ ID NO: 1 in Sequence Listing under stringent conditions, and which codes for the protein having the activity of making the bacterium having the protein L-homoserine-resistant.
3. A bacterium belonging to the genus Escherichia, wherein L-homoserine resistance of said bacterium is enhanced by amplifying a copy number of the DNA as defined in claim 1 in a cell of said bacterium.
4. The bacterium according to claim 3, wherein the DNA as defined in claim 1 is carried on a multicopy vector in the cell of said bacterium.
5. The bacterium according to claim 3, wherein the DNA as defined in claim 1 is carried on a transposon in the cell of said bacterium.
6. A method for producing an amino acid, comprising the steps of: cultivating the bacterium as defined in any one of claims 3 to 5, which has an ability to produce the amino acid, in a culture medium, to produce and accumulate the amino acid in the medium, and recovering the amino acid from the medium.
7. The method according to the claim 6, wherein said amino acid is at least one selected from the group consisting of L-homoserine, L-alanine, L-isoleucine, L-valine and L-threonine.

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L2: Entry 2 of 7

File: PGPB

May 16, 2002

PGPUB-DOCUMENT-NUMBER: 20020058314  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020058314 A1

TITLE: DNA coding for protein which confers on bacterium escherichia coli resistance to L-homoserine, and method for producing L-amino acids

PUBLICATION-DATE: May 16, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaly Arkadievich	Moscow		RU	
Zakataeva, Natalya Pavlovna	Moscow		RU	
Aleoshin, Vladimir Venyamiovich	Moscow		RU	
Balareova, Alla Valentinovna	Moscow		RU	
Tokhmakova, Irina Lvovna	Moscow		RU	

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
AJINOMOTO CO., INC.	Tokyo		JP	03

APPL-NO: 09/ 927395 [PALM]

DATE FILED: August 13, 2001

## RELATED-US-APPL-DATA:

Application 09/927395 is a division-of US application 09/396357, filed September 15, 1999, US Patent No. 6303348

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
RU	98118425	1998RU-98118425	October 13, 1998

INT-CL: [07] C12 P 13/04, C12 N 9/10, C07 H 21/04, C12 N 1/21, C12 P 21/02

US-CL-PUBLISHED: 435/106; 435/252.3, 435/193, 536/23.2, 435/69.1

US-CL-CURRENT: 435/106; 435/193, 435/252.3, 435/69.1, 536/23.2

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

A bacterium which has an ability to produce an amino acid and in which a novel gene (rhtB) coding for a protein having an activity of making a bacterium having the protein L-homoserine-resistant is enhanced, is cultivated in a culture medium to produce and accumulate the amino acid in the medium, and the amino acid is recovered from the medium.

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L2: Entry 2 of 7

File: PGPB

May 16, 2002

PGPUB-DOCUMENT-NUMBER: 20020058314  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020058314 A1

TITLE: DNA coding for protein which confers on bacterium escherichia coli resistance to L-homoserine, and method for producing L-amino acids

PUBLICATION-DATE: May 16, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaly Arkadievich	Moscow		RU	
Zakataeva, Natalya Pavlovna	Moscow		RU	
Aleoshin, Vladimir Venyamiovich	Moscow		RU	
Balareova, Alla Valentinovna	Moscow		RU	
Tokhmakova, Irina Lvovna	Moscow		RU	

US-CL-CURRENT: 435/106, 435/193, 435/252.3, 435/69.1, 536/23.2

## CLAIMS:

What is claimed is:

1. A DNA coding for a protein as defined in the following (A) or (B): (A) a protein which comprises an amino acid sequence shown in SEQ ID NO:2 in Sequence Listing; or (B) a protein which comprises an amino acid sequence including deletion, substitution, insertion or addition of one or several amino acids in the amino acid sequence shown in SEQ ID NO:2 in Sequence Listing, and which has an activity of making a bacterium having the protein L-homoserine-resistant.
2. The DNA according to claim 1, which is a DNA as defined in the following (a) or (b): (a) a DNA which comprises a nucleotide sequence of the nucleotide numbers of 557 to 1171 of a nucleotide sequence shown in SEQ ID NO:1 in Sequence Listing; or (b) a DNA which hybridizes with the nucleotide sequence of the nucleotide numbers of 557 to 1171 of the nucleotide sequence shown in SEQ ID NO:1 in Sequence Listing under stringent conditions, and which codes for the protein having the activity of making the bacterium having the protein L-homoserine-resistant.
3. A bacterium belonging to the genus Escherichia, wherein L-homoserine resistance of said bacterium is enhanced by amplifying a copy number of the DNA as defined in claim 1 in a cell of said bacterium.
4. The bacterium according to claim 3, wherein the DNA as defined in claim 1 is carried on a multicopy vector in the cell of said bacterium.
5. The bacterium according to claim 3, wherein the DNA as defined in claim 1 is carried on a transposon in the cell of said bacterium.
6. A method for producing an amino acid, comprising the steps of: cultivating the bacterium as defined in any one of claims 3 to 5, which has an ability to produce the amino acid, in a culture medium, to produce and accumulate the amino acid in the medium, and recovering the amino acid from the medium.
7. The method according to the claim 6, wherein said amino acid is at least one selected from the group consisting of L-homoserine, L-alanine, L-isoleucine, L-valine and L-threonine.

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L3: Entry 3 of 4

File: PGPB

Dec 6, 2001

PGPUB-DOCUMENT-NUMBER: 20010049126  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20010049126 A1

TITLE: Amino acid producing strains belonging to the genus Escherichia and method for producing amino acid

PUBLICATION-DATE: December 6, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaliy Arkadyevich	Moscow		RU	
Doroshenko, Vera Georgievna	Moscow		RU	
Mashko, Sergei Vlsdimirovich	Moscow		RU	
Akhverdian, Valery Zavenovich	Moscow		RU	
Kozlov, Yury Ivanovich	Moscow		RU	

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
Ajinomoto Co., Inc.	Tokyo		JP	03

APPL-NO: 09/ 841609 [PALM]

DATE FILED: April 25, 2001

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
RU	2000110350	2000RU-2000110350	April 26, 2000

INT-CL: [07] C12 P 13/04, C12 N 1/20

US-CL-PUBLISHED: 435/106; 435/252.33

US-CL-CURRENT: 435/106; 435/252.33

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

An amino acid such as threonine, homoserine, isoleucine, lysine, valine and tryptophan is produced using a bacterium belonging to the genus Escherichia which has been constructed from a sucrose non-assimilative strain belonging to the genus Escherichia and which harbors sucrose non-PTS or PTS genes and has an ability to produce the amino acid.

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Search Results - Record(s) 1 through 7 of 7 returned.

☐ 1. Document ID: US 20020102670 A1

L2: Entry 1 of 7

File: PGPB

Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020102670  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020102670 A1

TITLE: DNA coding for protein which confers on bacterium Escherichia coli resistance to L-homoserine, and method for producing L-amino acids

PUBLICATION-DATE: August 1, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaly Arkadievich	Moscow		RU	
Zakataeva, Natalya Pavlovna	Moscow		RU	
Aleoshin, Vladimir Venyamiovich	Moscow		RU	
Balareova, Alla Valentinovna	Moscow		RU	
Tokhmakova, Irina Lvovna	Moscow		RU	

US-CL-CURRENT: [435/116](#); [435/193](#); [435/252.3](#); [435/69.1](#); [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RIIC	Draw Desc	Image
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☐ 2. Document ID: US 20020058314 A1

L2: Entry 2 of 7

File: PGPB

May 16, 2002

PGPUB-DOCUMENT-NUMBER: 20020058314  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020058314 A1

TITLE: DNA coding for protein which confers on bacterium escherichia coli resistance to L-homoserine, and method for producing L-amino acids

PUBLICATION-DATE: May 16, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Livshits, Vitaly Arkadievich	Moscow		RU	
Zakataeva, Natalya Pavlovna	Moscow		RU	
Aleoshin, Vladimir Venyamiovich	Moscow		RU	
Balareova, Alla Valentinovna	Moscow		RU	
Tokhmakova, Irina Lvovna	Moscow		RU	

US-CL-CURRENT: [435/106](#); [435/193](#); [435/252.3](#); [435/69.1](#); [536/23.2](#)



Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
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☐ 3. Document ID: US 6303348 B1

L2: Entry 3 of 7

File: USPT

Oct 16, 2001

US-PAT-NO: 6303348

DOCUMENT-IDENTIFIER: US 6303348 B1

TITLE: DNA coding for protein which confers on bacterium escherichia coli resistance to L-homoserine and method for producing L-amino acids

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
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☐ 4. Document ID: US 5376538 A

L2: Entry 4 of 7

File: USPT

Dec 27, 1994

US-PAT-NO: 5376538

DOCUMENT-IDENTIFIER: US 5376538 A

TITLE: Process for producing L-threonine with strains of E coli resistant to phenylalanine and leucine

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
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☐ 5. Document ID: US 5017483 A

L2: Entry 5 of 7

File: USPT

May 21, 1991

US-PAT-NO: 5017483

DOCUMENT-IDENTIFIER: US 5017483 A

TITLE: Process for producing L-threonine

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
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☐ 6. Document ID: JP 01039996 A

L2: Entry 6 of 7

File: JPAB

Feb 10, 1989

PUB-NO: JP401039996A

DOCUMENT-IDENTIFIER: JP 01039996 A

TITLE: PRODUCTION OF L-THREONINE BY FERMENTATION

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
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☐ 7. Document ID: JP 01039996 A

L2: Entry 7 of 7

File: DWPI

Feb 10, 1989

DERWENT-ACC-NO: 1989-089711

DERWENT-WEEK: 198912

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(FILE 'HOME' ENTERED AT 12:07:48 ON 30 OCT 2002)

INDEX 'ADISALERTS, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,  
BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO,  
CABA,  
CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB,  
DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 12:16:18 ON  
30 OCT 2002

SEA (E.COLI OR COLI)

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3024 FILE ADISALERTS  
400 FILE ADISINSIGHT  
209 FILE ADISNEWS  
15612 FILE AGRICOLA  
769 FILE ANABSTR  
2917 FILE AQUASCI  
7511 FILE BIOBUSINESS  
1809 FILE BIOCOMMERCE  
238995 FILE BIOSIS  
34559 FILE BIOTECHABS  
34559 FILE BIOTECHDS  
87308 FILE BIOTECHNO  
34660 FILE CABA  
24018 FILE CANCERLIT  
224320 FILE CAPLUS  
6869 FILE CEABA-VTB  
126 FILE CEN  
832 FILE CIN  
6219 FILE CONFSCI  
162 FILE CROPB  
991 FILE CROPU  
11612 FILE DDFB  
26061 FILE DDFU  
68692 FILE DGENE  
11612 FILE DRUGB  
176 FILE DRUGLAUNCH  
214 FILE DRUGMONOG2  
202 FILE DRUGNL  
29119 FILE DRUGU  
280 FILE DRUGUPDATES  
1099 FILE EMBAL  
150258 FILE EMBASE  
48113 FILE ESBIODBASE  
3469 FILE FEDRIP  
12 FILE FOMAD  
9 FILE FOREGE  
7578 FILE FROSTI  
12689 FILE FSTA  
2182671 FILE GENBANK  
863 FILE HEALSAFE  
5657 FILE IFIPAT  
17968 FILE JICST-EPLUS  
276 FILE KOSMET  
83903 FILE LIFESCI  
36 FILE MEDICONF  
211258 FILE MEDLINE

994 FILE NIOSHTIC  
 2703 FILE OTIS  
 538 FILE CEAN  
 64138 FILE PASCAL  
 608 FILE PHAR  
 93 FILE PHARMAML  
 5 FILE PHIC  
 1642 FILE PHIN  
 8195 FILE PROMT  
 180426 FILE SCISEARCH  
 5 FILE SYNTHLINE  
 114478 FILE TOXCENTER  
 48368 FILE USPATFULL  
 386 FILE USPAT2  
 1624 FILE VETB  
 4330 FILE VETU  
 12619 FILE WPIDS  
 12619 FILE WPINDEX

L1 QUE (E.COLI OR COLI)

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FILE 'BIOSIS, CAPLUS, MEDLINE, EMBASE, ESBIODBASE, BIOTECHNO, SCISEARCH'  
 ENTERED AT 12:19:23 ON 30 OCT 2002

L2 23 S L1 AND (RHTA OR RHTB OR RHTA23)  
 L3 11 DUP REM L2 (12 DUPLICATES REMOVED)  
 L4 11 S L1 AND (HOMOSERINE RESIST?)  
 L5 8 DUP REM L4 (3 DUPLICATES REMOVED)

=> d 13 ibib ab 1-11

L3 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 2002:276181 CAPLUS  
DOCUMENT NUMBER: 136:305142  
TITLE: Fermentation process for the preparation of L-amino acids using recombinant strains of the family Enterobacteriaceae  
INVENTOR(S): Rieping, Mechthild; Bastuck, Christine; Hermann, Thomas; Thierbach, Georg  
PATENT ASSIGNEE(S): Degussa A.-G., Germany  
SOURCE: PCT Int. Appl., 63 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002029080	A2	20020411	WO 2001-EP10209	20010905
WO 2002029080	A3	20020926		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
DE 10130192	A1	20020411	DE 2001-10130192	20010622
AU 2001093795	A5	20020415	AU 2001-93795	20010905
PRIORITY APPLN. INFO.:			DE 2000-10048605 A	20000930
			DE 2000-10055516 A	20001109
			DE 2001-10130192 A	20010622
			WO 2001-EP10209 W	20010905

AB The invention relates to a fermn. process for the prepn. of L-amino acids,

esp. L-threonine and provides genetically modified microorganisms of the family Enterobacteriaceae enhanced to produce the desired product. The process consists of the following steps are carried out: fermn. of the microorganisms of the family Enterobacteriaceae producing the desired L-amino acid, in which microorganisms at least the pckA gene and/or the open reading frames yjfA and ytfP are individually or jointly attenuated and enrichment of the L-amino acid in the medium or in the bacterial cells, and isolation of the L-amino acid. Thus, Escherichia coli strain K12 MG442.DELTA.pckA, contg. an inactivated pckA gene, produced

3.7

g/L L-threonine compared to 1.5 g/L from the unmutated strain.

L3 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 2002:72263 CAPLUS  
DOCUMENT NUMBER: 136:133691  
TITLE: Recombinant Enterobacteriaceae overexpressing malate:quinone oxidoreductase gene mqo and their use in threonine production  
INVENTOR(S): Rieping, Mechthild; Thierbach, Georg; Van Der Rest,

Michel Eduard; Molenaar, Douwe  
PATENT ASSIGNEE(S): Degussa AG, Germany  
SOURCE: PCT Int. Appl., 39 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002006459	A1	20020124	WO 2001-EP5548	20010516
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 10103874	A1	20020131	DE 2001-10103874	20010130
US 2002127678	A1	20020912	US 2001-801042	20010308
PRIORITY APPLN. INFO.:				
				DE 2000-10034833 A 20000718
				DE 2001-10103874 A 20010130
				US 2000-229329P P 20000901

AB The invention provides a process for the fermentative prepn. of L-threonine using Enterobacteriaceae which in particular already produce L-threonine and in which the nucleotide sequence(s) which code(s) for the mqo gene are enhanced, in particular over-expressed. Thus, the mqo gene of Escherichia coli was overexpressed in E. coli. The transformant produced 2-fold more threonine than did the parent bacteria.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L3 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 2002:349112 CAPLUS  
DOCUMENT NUMBER: 136:354249  
TITLE: Fermentative production of L-amino acids with poxB mutants of Enterobacteriaceae  
INVENTOR(S): Thierbach, Georg; Rieping, Mechthild  
PATENT ASSIGNEE(S): Degussa A.-G., Germany  
SOURCE: Ger. Offen., 22 pp.  
CODEN: GWXXBX  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10112107	A1	20020508	DE 2001-10112107	20010314
WO 2002036797	A2	20020510	WO 2001-EP11228	20010928
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002015910	A5	20020515	AU 2002-15910	20010928
PRIORITY APPLN. INFO.:				
				DE 2000-10054748 IA 20001104

US 2000-248210P P 20001115  
DE 2001-1011210 20010314  
US 2001-283612P P 20010416  
WO 2001-EP11228 W 20010928

AB The invention concerns a procedure for the fermentative prodn. of L-amino acids, in particular L-threonine, in which the poxB gene of an L-amino acid-producing microorganism of the family Enterobacteriaceae is inactivated and the resulting mutant is cultured to produce the L-amino acid. The mutant may addnl. overexpress another gene which enhances L-amino acid biosynthesis. Thus, a deletion mutation was introduced into the poxB gene of L-threonine-producing *E. coli* MG442. This mutant was further transformed with expression plasmids for the *gdhA* or *rhtC* genes. L-Threonine prodn. with the *rhtC* gene-expressing, .DELTA.poxB strain was increased approx. 2.6-fold relative to the parent strain.

L3 ANSWER 4 OF 11 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE  
1

ACCESSION NUMBER: 2002:462669 BIOSIS  
DOCUMENT NUMBER: PREV200200462669  
TITLE: Influence of threonine exporters on threonine production  
in

*Escherichia coli*.

AUTHOR(S): Kruse, D.; Kraemer, R.; Eggeling, L.; Rieping, M.;  
Pfefferle, W.; Tchieu, J. H.; Chung, Y. J.; Saier, M. H.,  
Jr.; Burkovski, A. (1)

CORPORATE SOURCE: (1) Institut fuer Biochemie der Universitaet zu Koeln,  
Zuelpicherstrasse 47, 50674, Cologne: a.burkovski@uni-  
koeln.de Germany

SOURCE: Applied Microbiology and Biotechnology, (July, 2002) Vol.  
59, No. 2-3, pp. 205-210.

[http://www.link.springer.de/link/](http://www.link.springer.de/link/service/journals/00253/index.htm)  
service/journals/00253/index.htm. print.  
ISSN: 0175-7598.

DOCUMENT TYPE: Article

LANGUAGE: English

AB Threonine production in *Escherichia coli* threonine producer  
strains is enhanced by overexpression of the *E. coli*  
*rhtB* and *rhtC* genes or by heterologous overexpression of the gene  
encoding the *Corynebacterium glutamicum* threonine excretion carrier,  
thrE.

Both *E. coli* genes give rise to a threonine-resistant  
phenotype when overexpressed, and they decrease the accumulation of  
radioactive metabolites derived from (14C) L-threonine. The evidence  
presented supports the conclusion that both *RhtB* and *RhtC*  
catalyze efflux of L-threonine and other structurally related neutral  
amino acids, but that the specificities of these two carriers differ  
substantially.

L3 ANSWER 5 OF 11 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2001:568125 BIOSIS

DOCUMENT NUMBER: PREV200100568125

TITLE: DNA coding for protein which confers on bacterium  
*escherichia coli* resistance to L-homoserine and  
method for producing L-amino acids.

AUTHOR(S): Livshits, Vitaly Arkadievich (1); Zakataeva, Natalya  
Pavlovna; Aleoshin, Vladimir Venyamiovich; Balareova, Alla  
Valentinovna; Tokhmakova, Irina Lvovna

CORPORATE SOURCE: (1) Moscow Russia  
ASSIGNEE: Ajinomoto Co., Inc., Tokyo, Japan

PATENT INFORMATION: US 6303348 October 16, 2001

SOURCE: Official Gazette of the United States Patent and Trademark  
Office Patents, (Oct. 16, 2001) Vol. 1251, No. 3, pp. No  
Pagination. e-file.  
ISSN: 0098-1133.

DOCUMENT TYPE: Patent

LANGUAGE: English

AB A bacterium which has an ability to produce an amino acid and in which a novel gene (**rhtB**) coding for a protein having an activity of making a bacterium having the protein L-homoserine-resistant is enhanced, is cultivated in a culture medium to produce and accumulate the amino acid in the medium, and the amino acid is recovered from the medium.

L3 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:456755 CAPLUS

DOCUMENT NUMBER: 133:85119

TITLE: Production of L-amino acids by bacterium transformed with amino acid excretion protein homologs

INVENTOR(S): Livshits, Vitaliy Arkadievich; Zakataeva, Natalia Pavlovna; Nakanishi, Kazuo; Aleshin, Vladimir Veniaminovich; Troshin, Petr Vladimirovich; Tokhmakova, Irina Lyvovna

PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan

SOURCE: Eur. Pat. Appl., 29 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1016710	A2	20000705	EP 1999-125263	19991217
EP 1016710	A3	20000906		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
RU 2175351	C2	20011027	RU 1999-104431	19990309
AU 9964493	A1	20000706	AU 1999-64493	19991213
ZA 9907767	A	20000630	ZA 1999-7767	19991220
JP 2000189180	A2	20000711	JP 1999-373651	19991228
BR 9906287	A	20010123	BR 1999-6287	19991228
KR 2000048465	A	20000725	KR 1999-64627	19991229
CN 1261626	A	20000802	CN 1999-127522	19991230
PRIORITY APPLN. INFO.:			RU 1998-124016	A 19981230
			RU 1999-104431	A 19990309

AB A bacterium belonging to the genus Escherichia is provided having an ability to produce an L-amino acid, wherein the ability to produce the L-amino acid is increased by increasing an expression amt. of an L-amino acid excretion protein. Thus, genes yahN, yfiK, yeaS, and yggA are isolated by PCR amplification and shown to have homol. with lysine transporter LysE of Corynebacterium glutamicum and **RhtB** protein. When these genes are amplified in **E. coli**, the transformed organism shows increased levels of L-amino acid prodn.

L3 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:441462 CAPLUS

DOCUMENT NUMBER: 133:69834

TITLE: Recombinant Escherichia coli strains containing genes rhtC and **rhtB** (encode proteins resulting in enhanced L-threonine and L-homoserine resistance activity) and use of strains for enhanced amino acid production

INVENTOR(S): Livshits, Vitaliy Arkadyevich; Zakataeva, Natalia Pavlovna; Aleshin, Vladimir Veniaminovich; Belareva, Alla Valentinova; Tokhmakova, Irina Lyvovna

PATENT ASSIGNEE(S): Ajinomoto Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 24 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1013765	A1	20000628	EP 1999-125406	19991220
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
RU 2148642	C1	20000510	RU 1998-123511	19981223
JP 2000189177	A2	20000711	JP 1999-356018	19991215
AU 9965435	A1	20000629	AU 1999-65435	19991222
ZA 9907819	A	20000630	ZA 1999-7819	19991222
KR 2000048340	A	20000725	KR 1999-60483	19991222
CN 1260393	A	20000719	CN 1999-126909	19991223
BR 9906283	A	20010403	BR 1999-6283	19991223

## PRIORITY APPLN. INFO.:

RU 1998-123511 A 19981223

AB The invention provides recombinant *Escherichia coli* strains with enhanced L-threonine and L-homoserine resistance activity and use of these

recombinant *E. coli* to increased prodn. of amino acids, including L-threonine, L-homoserine, L-valine and L-leucine. The invention also relates that the recombinant *E. coli* are produced by genetic transformation of genes *rhtC* and *rhtB*, encoding proteins resulting in enhanced L-threonine and L-homoserine resistance activity, resp. The invention further provides the: (1) DNA (gene *rhtC*) encoding the protein resulting in enhanced L-threonine; (2) DNA sequence of gene *rhtC*; (3) a primer and probe specific for the *rhtC* gene and (4) protein sequence of the proteins encoded by genes *rhtC* and *rhtB*. The invention also included the DNA sequence for gene *rhtB*. In the example section, the invention included: (1) cloning and identification of *E. coli* genes *rhtC* and *rhtB*; (2) methods used in prodn. of the recombinant *E. coli* strains and (3) effects of gene *rhtC* and *rhtB* proteins on homoserine and threonine prodn. in recombinant *E. coli*. The invention also reported on the homol. between the *E. coli* gene *rhtC* and *rhtB* proteins with lysine transporter *Lyse* of *Corynebacterium glutamicum*.

## REFERENCE COUNT:

6

THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

## FORMAT

L3 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:259844 CAPLUS

DOCUMENT NUMBER: 132:276602

TITLE: The *rhtB* gene conferring resistance to L-homoserine to bacteria and its use in developing strains for fermentation of amino acids

INVENTOR(S): Livshits, Vitaly Arkadievich; Zakataeva, Natalya Pavlovna; Aleoshin, Vladimir Venyamiovich; Belareova, Alla Valentinovna; Tokhmakova, Irina Lvovna

PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan

SOURCE: Eur. Pat. Appl., 14 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 994190	A2	20000419	EP 1999-118581	19990920
EP 994190	A3	20020814		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
RU 2144564	C1	20000120	RU 1998-118425	19981013
AU 9947550	A1	20000420	AU 1999-47550	19990913
US 6303348	B1	20011016	US 1999-396357	19990915



ZA 9906042	A	20000404	ZA 1999-6042	19990921
BR 9904955		20001212	BR 1999-4955	19991011
JP 2000116390		20000425	JP 1999-289777	19991012
KR 2000029006	A	20000525	KR 1999-44027	19991012
CN 1254014	A	20000524	CN 1999-121353	19991013
US 2002102670	A1	20020801	US 2001-847392	20010503
US 2002058314	A1	20020516	US 2001-927395	20010813
PRIORITY APPLN. INFO.:			RU 1998-118425	A 19981013
			US 1999-396357	A1 19990915

AB Amino acid-fermenting strains of *Escherichia coli* carrying an allele of the **rhtB** gene that makes them resistant to L-homoserine are described. The gene was identified and cloned using a mini-Mu phagemid with clones selected for by conferring homoserine resistance. Two genes conferring resistance were identified. One was the prior art **rhtA** gene and the other was the novel **rhtB** gene. The gene also confers resistance to a no. of other toxic amino acid analogs including .alpha.-amino-.beta.-hydroxyvaleric acid.

L3 ANSWER 9 OF 11 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE  
2

ACCESSION NUMBER: 1999:340783 BIOSIS  
DOCUMENT NUMBER: PREV199900340783  
TITLE: The novel transmembrane *Escherichia coli* proteins involved in the amino acid efflux.  
AUTHOR(S): Zakataeva, Natalia P. (1); Aleshin, Vladimir V.; Tokmakova, Irina L.; Troshin, Petr V.; Livshits, Vitaliy A.  
CORPORATE SOURCE: (1) Ajinomoto-Genetika Research Institute, 1-st Dorozhnyi Proezd. b.1, Moscow, 113545 Russia  
SOURCE: FEBS Letters, (June 11, 1999) Vol. 452, No. 3, pp. 228-232.  
ISSN: 0014-5793.  
DOCUMENT TYPE: Article  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB A novel gene of *Escherichia coli*, **rhtB**, has been characterized. Amplification of this gene provides resistance to homoserine and homoserine lactone. Another *E. coli* gene, **rhtC**, provides resistance to threonine. The homologues of **RhtB** are widely distributed among various eubacteria and archaea, from one to 12 copies of family members that differ in their primary structure were found in the genomes. Most of them are genes that encode hypothetical transmembrane proteins. Experimental data that indicate participation of the **rhtB** product in the excretion of homoserine have been obtained.

L3 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:514310 CAPLUS  
DOCUMENT NUMBER: 131:296676  
TITLE: A new family of amino-acid-efflux proteins  
AUTHOR(S): Aleshin, Vladimir V.; Zakataeva, Natalia P.; Livshits, Vitaliy A.  
CORPORATE SOURCE: State Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow, 113545, Russia  
SOURCE: Trends in Biochemical Sciences (1999), 24(4), 133-135  
CODEN: TBSCDB; ISSN: 0376-5067  
PUBLISHER: Elsevier Science Ltd.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Multiple alignment of **RhtB** proteins is reported. The authors have found a set of proteins that are homologous to **RhtB** in a wide range of prokaryotes that includes proteobacteria, cyanobacteria, bacilli, mycobacteria, and the archaea *Archaeoglobus fulgidus* and

Methanobacterium thermoautotrophicum. The authors suggest that RhtB is involved in the efflux of homoserine and threonine in E. coli. It is proposed that the RhtB proteins belong to a new, widespread class of functionally important transporters that allow excretion of metabolites from different prokaryotes and archaea.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L3 ANSWER 11 OF 11 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1997:419723 BIOSIS  
DOCUMENT NUMBER: PREV199799718926  
TITLE: Characterization of a pleiotropic mutation that confers upon Escherichia coli cells resistance to high concentrations of homoserine and threonine.  
AUTHOR(S): Zakataeva, N. P.; Aleoshin, V. A.; Livshits, V. A.  
CORPORATE SOURCE: State Inst. Genetics Selection of Industrial Microorganisms, Moscow Russia  
SOURCE: FASEB Journal, (1997) Vol. 11, No. 9, pp. A935.  
Meeting Info.: 17th International Congress of Biochemistry and Molecular Biology in conjunction with the Annual Meeting of the American Society for Biochemistry and Molecular Biology San Francisco, California, USA August 24-29, 1997  
ISSN: 0892-6638.  
DOCUMENT TYPE: Conference; Abstract  
LANGUAGE: English

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L5 ANSWER 1 OF 8 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 2001:568125 BIOSIS  
DOCUMENT NUMBER: PREV200100568125  
TITLE: DNA coding for protein which confers on bacterium  
escherichia coli resistance to L-homoserine and  
method for producing L-amino acids.  
AUTHOR(S): Livshits, Vitaly Arkadievich (1); Zakataeva, Natalya  
Pavlovna; Aleoshin, Vladimir Venyamiyovich; Balareova, Alla  
Valentinovna; Tokhmakova, Irina Lvovna  
CORPORATE SOURCE: (1) Moscow Russia  
ASSIGNEE: Ajinomoto Co., Inc., Tokyo, Japan  
PATENT INFORMATION: US 6303348 October 16, 2001  
SOURCE: Official Gazette of the United States Patent and Trademark  
Office Patents, (Oct. 16, 2001) Vol. 1251, No. 3, pp. No  
Pagination. e-file.  
ISSN: 0098-1133.  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
AB A bacterium which has an ability to produce an amino acid and in which a  
novel gene (rhtB) coding for a protein having an activity of making a  
bacterium having the protein L-homoserine-resistant is  
enhanced, is cultivated in a culture medium to produce and accumulate the  
amino acid in the medium, and the amino acid is recovered from the  
medium.

L5 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 2000:441462 CAPLUS  
DOCUMENT NUMBER: 133:69834  
TITLE: Recombinant Escherichia coli strains  
containing genes rhtC and rhtB (encode proteins  
resulting in enhanced L-threonine and L-  
homoserine resistance activity) and  
use of strains for enhanced amino acid production  
INVENTOR(S): Livshits, Vitaliy Arkadyevich; Zakataeva, Natalia  
Pavlovna; Aleshin, Vladimir Veniaminovich; Belareva,  
Alla Valentinova; Tokhmakova, Irina Lyvovna  
PATENT ASSIGNEE(S): Ajinomoto Co., Ltd., Japan  
SOURCE: Eur. Pat. Appl., 24 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1013765	A1	20000628	EP 1999-125406	19991220
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
RU 2148642	C1	20000510	RU 1998-123511	19981223
JP 2000189177	A2	20000711	JP 1999-356018	19991215
AU 9965435	A1	20000629	AU 1999-65435	19991222
ZA 9907819	A	20000630	ZA 1999-7819	19991222
KR 2000048340	A	20000725	KR 1999-60483	19991222
CN 1260393	A	20000719	CN 1999-126909	19991223
BR 9906283	A	20010403	BR 1999-6283	19991223

PRIORITY APPLN. INFO.:

RU 1998-123511 A 19981223

AB The invention provides recombinant *Escherichia coli* strains with enhanced L-threonine and L-homoserine resistance activity and use of these recombinant *E. coli* to increased prodn. of amino acids, including L-threonine, L-homoserine, L-valine and L-leucine. The invention also relates that the recombinant *E. coli* are produced by genetic transformation of genes *rhtC* and *rhtB*, encoding proteins resulting in enhanced L-threonine and L-homoserine resistance activity, resp. The invention further provides the: (1) DNA (gene *rhtC*) encoding the protein resulting in enhanced L-threonine; (2) DNA sequence of gene *rhtC*; (3) a primer and probe specific for the *rhtC* gene and (4) protein sequence of the proteins encoded by genes *rhtC* and *rhtB*. The invention also included the DNA sequence for gene *rhtB*. In the example section, the invention included: (1) cloning and identification of *E. coli* genes *rhtC* and *rhtB*; (2) methods used in prodn. of the recombinant *E. coli* strains and (3) effects of gene *rhtC* and *rhtB* proteins on homoserine and threonine prodn. in recombinant *E. coli*. The invention also reported on the homol. between the *E. coli* gene *rhtC* and *rhtB* proteins with lysine transporter *LysE* of *Corynebacterium glutamicum*.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L5 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:259844 CAPLUS

DOCUMENT NUMBER: 132:276602

TITLE: The *rhtB* gene conferring resistance to L-homoserine to

INVENTOR(S): bacteria and its use in developing strains for fermentation of amino acids  
Livshits, Vitaly Arkadievich; Zakataeva, Natalya Pavlovna; Aleoshin, Vladimir Venyamiovich; Belareova, Alla Valentinovna; Tokhmakova, Irina Lvovna

PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan

SOURCE: Eur. Pat. Appl., 14 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 994190	A2	20000419	EP 1999-118581	19990920
EP 994190	A3	20020814		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
RU 2144564	C1	20000120	RU 1998-118425	19981013
AU 9947550	A1	20000420	AU 1999-47550	19990913
US 6303348	B1	20011016	US 1999-396357	19990915
ZA 9906042	A	20000404	ZA 1999-6042	19990921
BR 9904955	A	20001212	BR 1999-4955	19991011
JP 2000116390	A2	20000425	JP 1999-289777	19991012
KR 2000029006	A	20000525	KR 1999-44027	19991012
CN 1254014	A	20000524	CN 1999-121353	19991013
US 2002102670	A1	20020801	US 2001-847392	20010503
US 2002058314	A1	20020516	US 2001-927395	20010813

PRIORITY APPLN. INFO.:

RU 1998-118425 A 19981013

US 1999-396357 A1 19990915

AB Amino acid-fermenting strains of *Escherichia coli* carrying an allele of the *rhtB* gene that makes them resistant to L-homoserine are described. The gene was identified and cloned using a mini-Mu phagemid with clones selected for by conferring homoserine resistance. Two genes conferring resistance were identified. One

was the prior art rhtA gene and the other was the novel rhtB gene. The gene also confers resistance to a no. of other toxic amino acid analogs including .alpha.-amino-.beta.-hydroxyvaleric acid.

L5 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1994:316907 CAPLUS

DOCUMENT NUMBER: 120:316907

TITLE: Threonine synthesis from homoserine as a selectable marker in mammalian cells

AUTHOR(S): Rees, William D.; Grant, Steven D.; Hay, Susan M.; Saqib, Khalid M.

CORPORATE SOURCE: Rowet Res. Inst., Bucksburn/Aberdeen, UK

SOURCE: Biochemical Journal (1994), 299(3), 637-44

CODEN: BIJOAK; ISSN: 0264-6021

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The plasmid pSVthrBC expresses the Escherichia coli thrB (homoserine kinase) and thrC (threonine synthase) genes in mouse cells and

enables them to synthesize threonine from homoserine. After transfection with pSVthrBC and culture in medium contg. homoserine, only cells that have incorporated pSVthrBC survive. Homoserine at concns. greater than 1 mM is toxic to mammalian cells. Mouse cells selected from medium contg.

5 mM homoserine had incorporated 20-100 copies of the plasmid per cell and homoserine kinase activities of 0.001-0.012 nmol/min per mg of protein per

copy. Cells selected from medium contg. 10 mM homoserine had incorporated

one or two copies of the plasmid per cell and had homoserine kinase activities of 0.06-0.39 nmol/min per mg of protein per copy. By using high concns. of homoserine, it is possible to use pSVthrBC to select and isolate cell lines that have one or two copies of the plasmid

incorporated

into an active region of chromatin. CHO and HeLa cells have also been successfully transfected with pSVthrBC. COS-7 cells are naturally resistant to homoserine as they are able to metabolize homoserine.

L5 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1991:534064 CAPLUS

DOCUMENT NUMBER: 115:134064

TITLE: Breeding of the host strains for engineered threonine producer

AUTHOR(S): Dong, Lei; Li, Meiyang; Chen, Yan; Zhang, Zhiyi; Peng,

Jingan; Yang, Shengli; Wu, Ruping

CORPORATE SOURCE: Shanghai Inst. Mater. Med., Acad. Sin., Shanghai, Peop. Rep. China

SOURCE: Gongye Weishengwu (1991), 21(2), 1-5

CODEN: GOWEEK; ISSN: 1001-6678

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB Escherichia coli A56 was used as a parent strain to select strains for threonine prodn. Strains resistant to both .alpha.-amino-.beta.-hydroxyvaleric acid (AHV) and S-(2-aminoethyl)-L-cysteine (AEC) were selected by spontaneous mutation of E. coli A 56. E. coli AA 4, accumulated 3-5 mg threonine/mL. In order to reduce threonine degrdn. during fermn., E. coli AA4 was treated with Et methanesulfonate (EMS). The mutants which could not grow in medium contg. L-threonine as sole N source were selected. E. coli AA 6 (AHVr, AECr, Thr-N-) was obtained. A homoserine-resistant strain, E. coli AA7 (AHVr, AECr, Thr-N-, Homr) also was obtained by using EMS. It accumulated 6-7 mg threonine/mL. When recombinant plasmid pTH2 carrying the threonine operon (AHVr) was transformed into E. coli AA7, the engineered strain E.

*E. coli* AA7 (pTH2) was obtained. The yield of threonine from *E. coli* AA7 (pTH2) increased to 22-25 mg/mL in flask and 31.2 mg/mL in 15-L fermentor.

L5 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1989:495639 CAPLUS  
DOCUMENT NUMBER: 111:95639  
TITLE: Manufacture of L-threonine with L-homoserine  
-resistant *Escherichia* species  
INVENTOR(S): Yamada, Masanari; Fukuyama, Mitsuo; Yomoto, Kiyosuke  
PATENT ASSIGNEE(S): Toray Industries, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 01039996	A2	19890210	JP 1987-196982	19870806
AB	L-Threonine (I) is manufd. from a culture of L-homoserine (II)-resistant <i>Escherichia</i> sp. II-resistant <i>E. coli</i> EH-92, isolated from N-methyl-N'-nitro-N-nitrosoguanidine-treated <i>E. coli</i> (ATCC 21248), was shake-cultured in a liq. medium (pH 6.8) contg. glucose, DL-methionine, L-valine, and salts at 30.degree. for 72 h to give 13.8 wt.% (based on utilized glucose) I, vs. 9.7 wt.% for a control parent strain.				

L5 ANSWER 7 OF 8 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE

1

ACCESSION NUMBER: 1989:123521 BIOSIS  
DOCUMENT NUMBER: BA87:58174  
TITLE: L THREONINE PRODUCTION BY L ASPARTATE AND L  
HOMOSERINE-RESISTANT MUTANT OF  
ESCHERICHIA-COLI.

AUTHOR(S): FURUKAWA S; OZAKI A; NAKANISHI T  
CORPORATE SOURCE: TECHNICAL RES. LAB., HOFU PLANT, KYOWA HAKKO KOGYO CO.,  
LTD., 1-1, KYOWA-MACHI, HOFU-SHI, YAMAGUCHI, 747 JAPAN.  
SOURCE: APPL MICROBIOL BIOTECHNOL, (1988) 29 (6), 550-553.  
CODEN: AMBIDG. ISSN: 0175-7598.

FILE SEGMENT: BA; OLD  
LANGUAGE: English

AB Growth and L-threonine productivty of L-threonine producer *Escherichia coli* H-4290 were inhibited by precursor amino acids, L-homoserine and L-aspartate. L-Threonine hyper-producers were isolated among the mutants resistant to L-homoserine and L-aspartate. Mutants H-4351 (Homr) and H-4578 (Homr, Aspr) accumulated 22.2 g/l and 24.3 g/l of L-threonine in test tube cultures, while the parental strain H-4290 accumulated 18.2 g/l. The enzyme level of aspartokinase I (first enzyme of the threonine operon) was enhanced 2.3 times (H-4351) and 3 times (H-4578) than of H-4290. Mutant H-4578 accumulated 76 g/l of L-threonine in a 2-1 jar fermentor after 75 h cultivation.

L5 ANSWER 8 OF 8 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE

2

ACCESSION NUMBER: 1986:161329 BIOSIS  
DOCUMENT NUMBER: BA81:71745  
TITLE: AMINATION IN *ESCHERICHIA-COLI* STRAINS EFFICIENTLY  
PRODUCING THREONINE.  
AUTHOR(S): ASTAUROVA O B; LIVSHITS V A; BELAREVA A V; SOKOLOV A K  
CORPORATE SOURCE: ALL-UNION RES. INST. GENET. SEL. IND. MICROORG., MOSCOW,  
USSR.  
SOURCE: PRIKL BIOKHIM MIKROBIOL, (1985 (RECD 1986)) 21 (5),  
611-616.  
CODEN: PBMIAK. ISSN: 0555-1099.

FILE SEGMENT: BA: OLD

LANGUAGE: Russian

AB The effect of the mutation of threonine and **homoserine resistance** (thrr) on the activity of the enzymes catalysing the biosynthesis of glutamic acid, glutamate synthase (EC 1.4.1.13) and glutamate dehydrogenase (EC 1.4.1.4), and on the productivity of a threonine-producing **E. coli** strain obtained by gene engineering was being studied. The resistance to threonine was found to correlate well with the increasing activities of the abovementioned enzymes and with a higher productivity of the **E. coli** strain.